

METHOD OF AND APPARATUS FOR COOLING A SEAL FOR MACHINERY

ABSTRACT

A method is provided for cooling a seal located in a wall of a chamber and through which a movable shaft passes, the seal being heated by hot pressurized vapor that leaks through the seal into the chamber and internal friction. The method comprises the steps of: providing a chamber in which the seal is located and into which the hot pressurized vapor leaks; injecting cool liquid into the chamber in which the seal is located; and cooling and condensing the hot pressurized vapor in the chamber thus cooling the seal. Preferably, the method includes the step of providing a pressure chamber for containing the hot pressurized vapor within which a turbine wheel is mounted on the shaft, and vapor leaks past a labyrinth mounted on the shaft between the turbine wheel and the seal. Apparatus is also provided for cooling a seal located in a wall of a chamber and through which a movable shaft passes, the seal being heated by hot pressurized vapor that leaks through the seal into the chamber in which the seal is located. The apparatus comprises a chamber in which the seal is located and into which leaks the hot pressurized vapor and means for injecting liquid into the chamber in which the seal is located such that the hot pressurized vapor is cooled and condenses in the chamber, thus cooling the seal. Preferably, the apparatus also includes a turbine wheel mounted on the shaft in the pressure chamber containing hot pressurized, vaporized working fluid, wherein the shaft passes through a labyrinth seal mounted on the shaft.